REMARKS

Applicant respectfully thanks the Examiner for the consideration provided to this application, and respectfully requests reconsideration of this application.

Each of claims 1, 67-70 and 85 has been amended for at least one reason unrelated to patentability, including at least one of: to explicitly present one or more elements, limitations, phrases, terms and/or words implicit in the claim as originally written when viewed in light of the specification, thereby not narrowing the scope of the claim; to detect infringement more easily; to enlarge the scope of infringement; to cover different kinds of infringement (direct, indirect, contributory, induced, and/or importation, etc.); to expedite the issuance of a claim of particular current licensing interest; to target the claim to a party currently interested in licensing certain embodiments; to enlarge the royalty base of the claim; to cover a particular product or person in the marketplace; and/or to target the claim to a particular industry.

Descriptive support for the amendments can be found in at least paragraph 13 of the application.

Claims 1, 15-17, 67-72, 74-76, and 82-88 are now pending in this application. Claims 1, 67-70, and 85 are in independent form.

I. Unfounded Assertions of Knowledge

In rejecting each of claims 69, 71-72, 74-76, and 82, the present Office Action makes numerous unsupported assertions as to what "is well known in the art". For example on page 4, the present Office Action states, without identifying any supporting evidence in the record, that "it is well know in the art that temperature-responsive polymeric compounds release heat during their phase change" and that "it is well known in the art that properties of a polymer depend on its molecular weight and degree of crosslinking". As another example, on pages 4 and 5, the present Office Action states, without identifying any supporting evidence in the record, that "M.W. and degree of crosslinking of a polymer determines a particle size of the polymer" and that "internally crosslinked NIPAM copolymer having phase change within claimed range of -3.89 to 4.4°C would have claimed molecular weight and claimed particle size, as required by claims 74-76".

Applicant respectfully submits that deficiencies of the cited references can not be remedied by general conclusions about what is basic knowledge or common sense to one of ordinary skill in the art. *In re Zurko*, 258 F.3d 1379, 1385-86 (Fed. Cir. 2001). An assessment of basic knowledge and common sense that is not based on any evidence in the record lacks substantial evidence support. *Id.* That is, such unfounded assertions are not permissible substitutes for evidence. *See, In re Lee*, 277 F.3d 1338, 1435, 61 USPQ2d 1430, 1435 (Fed. Cir. 2002).

Consequently, Applicant respectfully traverses, requests reconsideration, and requests withdrawal of all rejections based on these unsupported conclusory statements.

II. The Obviousness Rejections

Each of claims 69, 71-72, 74-76, and 82 was rejected under 35 U.S.C. 103(a) as being obvious, and thus unpatentable, over various combinations of U.S. Patent 5,225,062 ("Yoshioka"), U.S. Patent 6,180,562 ("Blum"), U.S. Patent 5,653,054 ("Savignano"), and/or U.S. Patent 4,732,930 ("Tanaka").

1. Missing Claim Limitations

Claim 69, from which each of claims 71-72, 74-76, and 82 ultimately depends, states, *inter alia,* yet no substantial evidence has been presented that the applied portions of the cited references teach, "the nanoparticles comprising an internally substantially crosslinked polymer comprising the at least one hydrophobic substituent and the N-isopropyl acrylamide, wherein the polymer releases heat over a range of dropping ambient temperatures below 0 degrees C".

The cited reference Yoshioka only describes a range of "0C – 90C", and therefore, no overlap exists with the claimed temperature range, and thus no *prima facie* evidence of obviousness exists.

Consequently, reconsideration and withdrawal of these rejections is respectfully requested.

2. "Adapted" Limitations Must Be Considered

Although unspecific and vague in what claim, and what limitation, it is addressing, the present Office Action appears to improperly interpret the following limitation of claim 69: "the composition adapted to form a coating over at least a portion of a surface of a plant".

In particular, the present Office Action incorrectly asserts on page 5 that "claims are directed to a 'composition' which is intended to be applied to plants" (emphasis in original) and that "[i]f the prior art structure is capable of performing the intended use, then it meets the claim".

In an appeal from the USPTO, when interpreting a claim limitation including multiple occurrences of the phrase "adapted to", the predecessor court to the Federal Circuit stated that:

> "although the claims before us contain some language which can be labeled 'conditional,' **this language**, rather than describing activities which may or may not occur, **serves to precisely define present structural attributes** of interrelated component parts";
>
> "**this language imparts a structural limitation**";
>
> "[w]e see nothing wrong in defining the structures of the components of the completed connector assembly in terms of the interrelationship of the components, or the attributes they must possess, in the completed assembly";
>
> "[m]ore particularly, we find nothing indefinite in these claims."

See In re Venezia, 530 F.2d 956 (CCPA 1976).

Even if a phrase containing the term "adapted" is interpreted as functional, "[t]here is nothing inherently wrong with defining some part of an invention in functional terms." *See In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971). Thus, even a "functional limitation **must be evaluated and considered**, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used." *See* MPEP 2173.05(g).

Thus, even when the Federal Circuit has interpreted the word "**adapted**" as preceding "functional language", it has found that such language "**limits the scope of these claims to devices that have the capability of" performing the stated function**. *See*, *R.A.C.C. Indus., Inc. v. Stun-Tech, Inc.*, 178 F.3d 1309, 49 USPQ2d 1793 (Fed. Cir. 1998) (*cert. denied*, 526 U.S.

1098 (1999)) (*cited with approval by* MPEP 2106.IV.B). *See also K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1363 (Fed. Cir. 1999) ("[F]unctional language is, of course, an additional limitation in the claim"). Because such functional language serves as a claim limitation, a reference cited to support a rejection of a claim must describe a structure(s) capable of performing each claimed function preceded by the term "adapted."

On appeal from the USPTO, the CCPA ruled on a relevant claim that stated "said color-providing substances associated with at least the inner photosensitive emulsion layers are *adapted to be rendered diffusible* in said liquid composition *only after at least substantial development* of the next outermost photosensitive … layer has occurred." *See*, *In re Land*, 368 F.2d 866, 151 USPQ 621, 635 (CCPA 1966). The CCPA noted that the italicized portions of the claim were functional and held the claim patentable in view of the **functional limitations**.

In another appeal from the USPTO, the Federal Circuit reversed an Examiner's rejection of a patent claim due to the Examiner's failure to provide patentable weight to **functional limitations**. *See, In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

In *Central Admixture Pharmacy v. Advanced Cardiac*, 482 F.3d 1347 (Fed. Cir. 2007), the USPTO's reviewing court found limitations preceded by the phrase "adapted to" to be definite:

> "[f]inally, ACS suggests that the patent's Claim 13 and its dependent claims are invalid for indefiniteness, since they describe a solution that is 'adapted to be diluted.' We do not read that phrase as possessing any significant ambiguity, much less intractable ambiguity making the claim 'not amenable to construction,' which is the requirement to demonstrate indefiniteness" (*citing Aero Prods., Inc. v. Intex Rec. Corp.*, 466 F.3d 1000, 1016 (Fed. Cir. 2006)."

Consequently, Applicant respectfully requests that all claimed limitations be given their full patentable weight and that any argument or rejection based on "claimed intended use" be reconsidered and withdrawn.

3. Lack of Evidence of a Reason to Combine References

Regarding the proffered combination of the applied portions of Blum and Tanaka, the present Office Action states, on pages 8 and 9:

> Blum teaches that *any* hydrogel polymers having optimum **level of hydration** and **degree of crosslinking** that release heat over a desired range of dropping ambient temperatures are suitable for protecting plants.
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have made a hydrogel polymer in Blum by crosslinking NIPAM using a crosslinking agent such as ethylene glycol dimethacrylate, glycerine triacrylate or divinylbenzene with the expectation of providing the desired strength, swelling degree, degree of crosslinking, phase transition temperature, as taught by Tanaka et al.

In *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), the Supreme Court warned that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art". Instead, "[i]n determining whether the invention as a whole would have been obvious under 35 U.S.C. 103, we must first delineate the invention as a whole. In delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question... but also to those properties of the subject matter which are inherent in the subject matter and are disclosed in the specification. . . Just as we look to a chemical and its properties when we examine the obviousness of a composition of matter claim, it is this invention **as a whole**, and not some part of it, which must be obvious under 35 U.S.C. 103." *In re Antonie*, 559 F.2d 618, 620, 195 USPQ 6,8 (CCPA 1977) (emphasis in original).

The Federal Circuit has further held that obviousness is not supported unless "a finite, and in the context of the art, small or easily traversed, number of options" "**would** convince an ordinarily skilled artisan of obviousness". *Ortho-McNeil Pharmaceutical Inc. v. Mylan Laboratories Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008).

The present Office Action provides no evidence of a motivation to utilize "NIPAM" and "ethylene glycol dimethacrylate, glycerine triacrylate or divinylbenzene" aside from the fact that these substances were known in the art. Indeed no motivation whatsoever is provided which would prompt a person having ordinary skill in the art to chose these substances over the multitude of possible substances in order to "release heat over a desired range of dropping ambient temperatures". Therefore, no motivation is provided to combine the cited references **in the way** claimed.

Furthermore, the present Office Action provides no substantial evidence of "interrelated teachings" between the cited references. Blum appears to be directed at the use of "a polymer component that releases heat" (Abstract), while Tanaka appears to be focused on a "gel" that "is capable of drastic volume change" (Abstract). In fact, the present Office Action provides no substantial evidence of "interrelated teachings" between the cited references that would inspire one of skill in the art to consider their combination for any reason.

Finally, the present Office Action fails to evidence "a finite, and in the context of the art, small or easily traversed, number of options" "would convince an ordinarily skilled artisan of obviousness". To the contrary, assuming *arguendo*, that Blum does "teach[] that any hydrogel polymers having optimum level of hydration and degree of crosslinking that release heat over a desired range of dropping ambient temperature are suitable for protecting plants", the Office Action provides no evidence that the number of such polymers is "small" and that Blum teaches how to identify **each** such "hydrogel polymer[] having [an] optimum level of hydration and degree of crosslinking that release[s] heat over a desired range of dropping ambient temperature".

CONCLUSION

It is respectfully submitted that the application is in clear condition for allowance. Reconsideration, withdrawal of all grounds of rejection, and issuance of a Notice of Allowance are earnestly solicited.

The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. 1.16 or 1.17 to Deposit Account 50-2504. The Examiner is invited to contact the undersigned at 434-972-9988 to discuss any matter regarding this application.

Respectfully submitted,

Michael Haynes PLC

Date: 17 February 2010

/Michael N. Haynes/

USPTO Registration: 40,014

1341 Huntersfield Close

Keswick, VA 22947